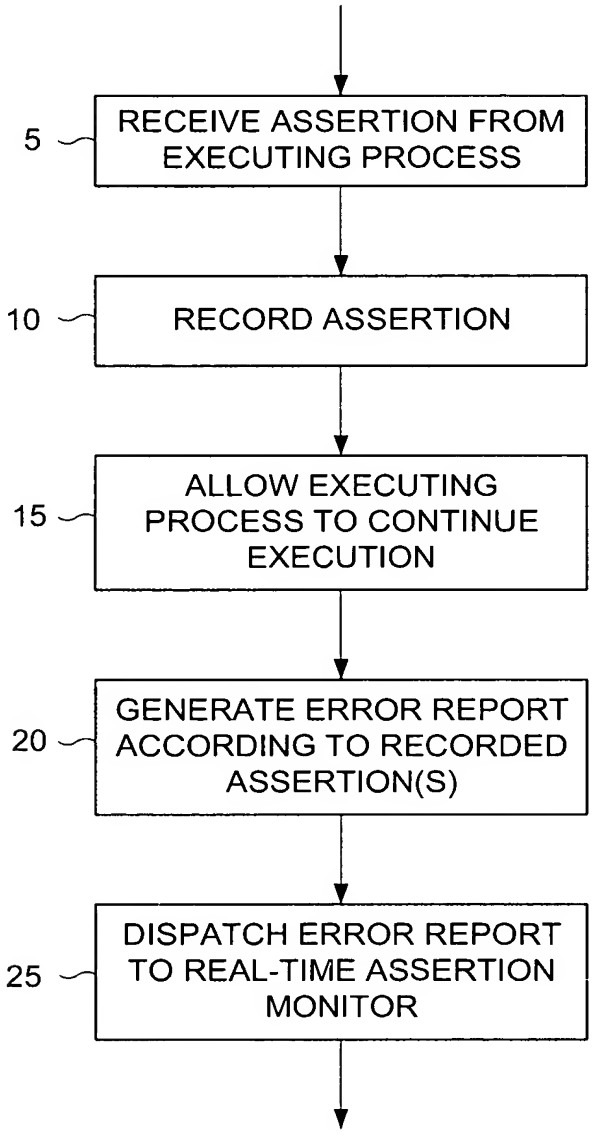

5
RECEIVE ASSERTION FROM EXECUTING PROCESS
10
RECORD ASSERTION
15
ALLOW EXECUTING PROCESS TO CONTINUE EXECUTION
20
GENERATE ERROR REPORT ACCORDING TO RECORDED ASSERTION(S)
25
DISPATCH ERROR REPORT TO REAL-TIME ASSERTION MONITOR

FIG. 1

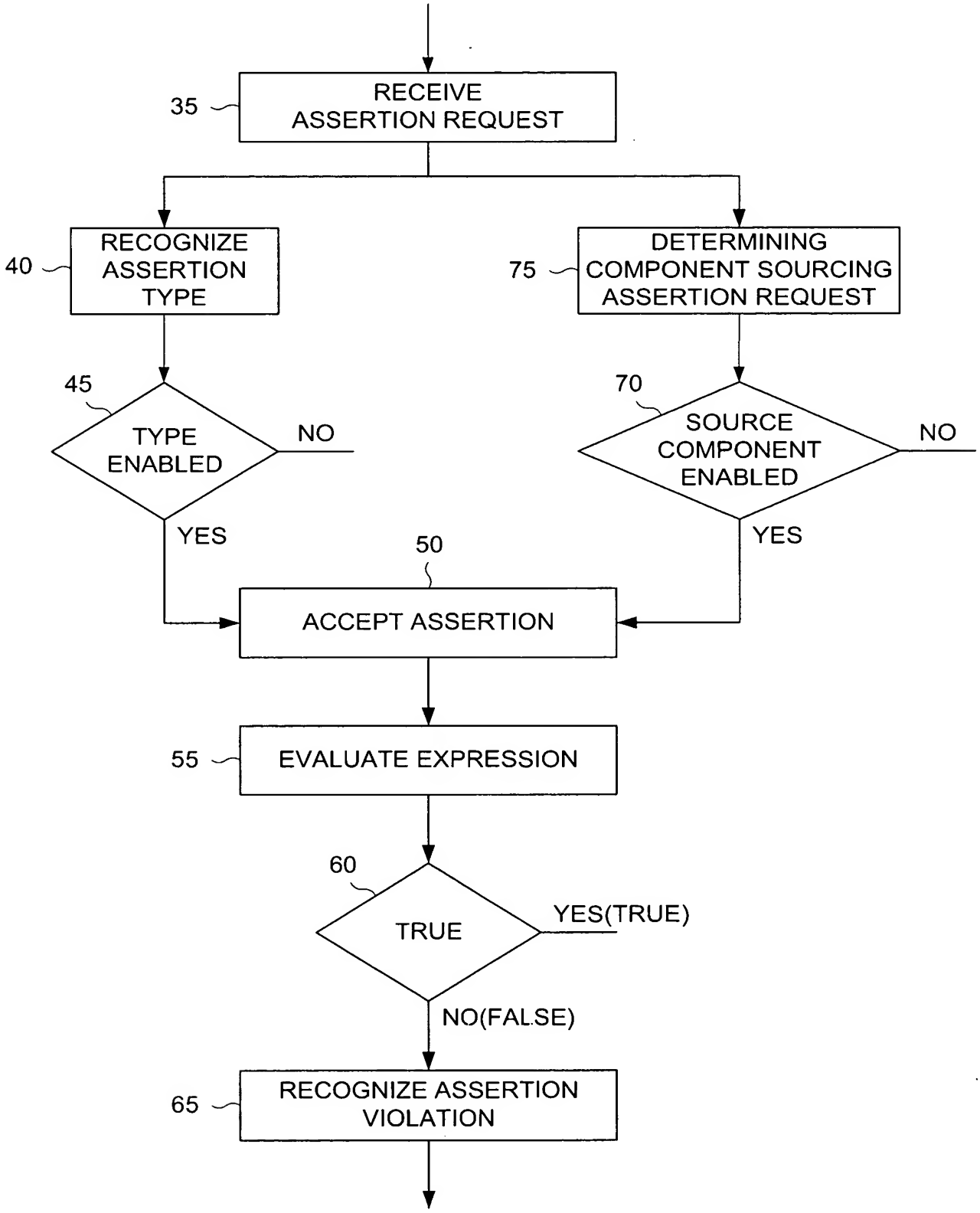
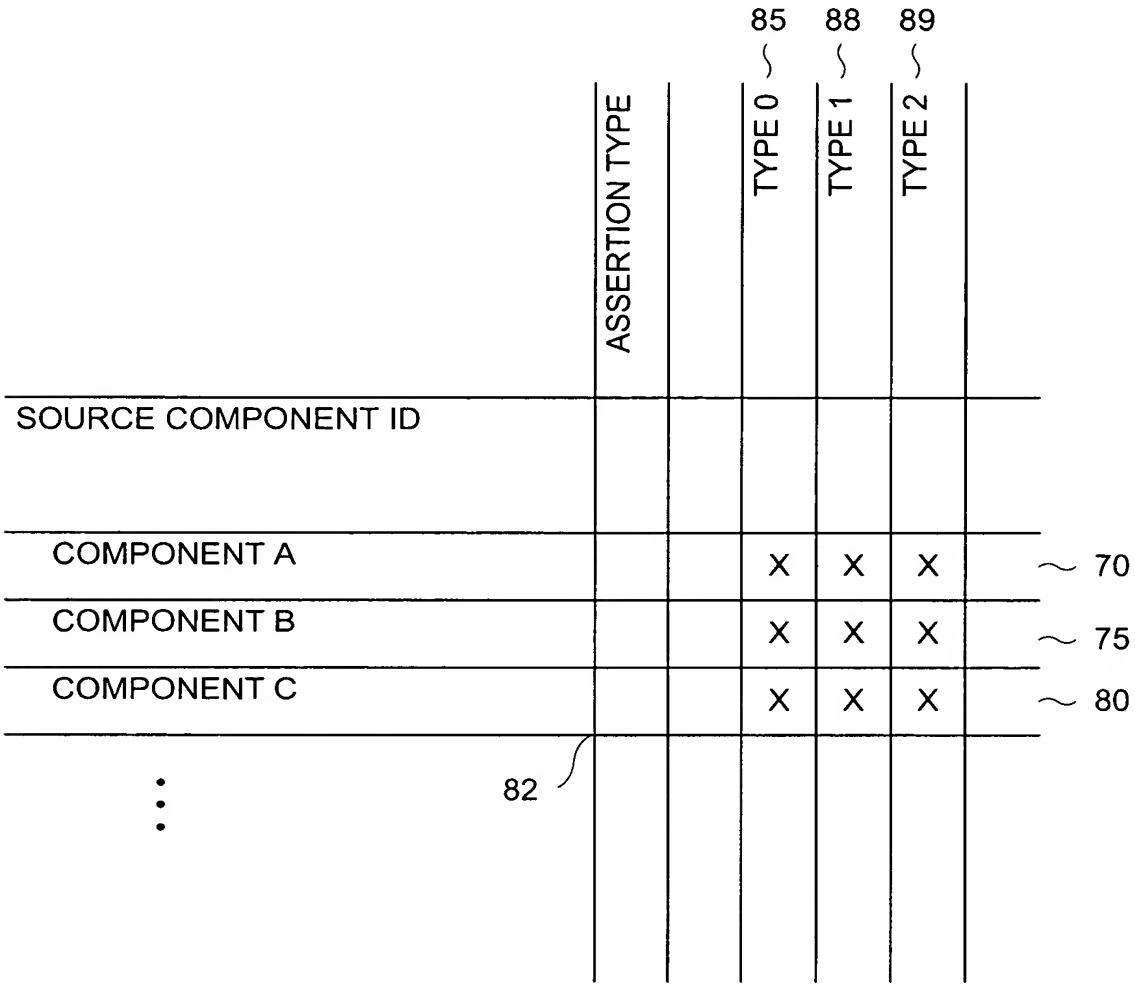

35
RECEIVE ASSERTION REQUEST
40
RECOGNIZE ASSERTION TYPE
75
DETERMINING COMPONENT SOURCING ASSERTION REQUEST
45
TYPE ENABLED
NO
YES
70
SOURCE COMPONENT ENABLED
NO
YES
50
ACCEPT ASSERTION
55
EVALUATE EXPRESSION
60
TRUE
YES(TRUE)
NO(FALSE)
65
RECOGNIZE ASSERTION VIOLATION

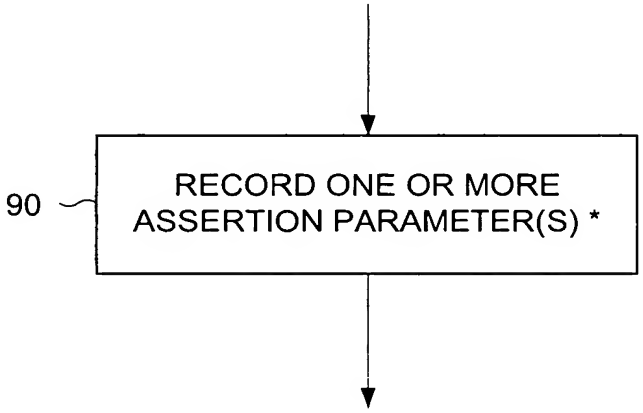
FIG. 2



EACH X IS A "1" WHEN THE INTERSECTING COMPONENT/TYPE COMBINATION IS ENABLED AND A "0" WHEN THE COMBINATION IS DISABLED

FIG. 3

RECORDING ASSERTION



* PARAMETERS:
- TYPE OF ASSERTION
- SEQUENCE NUMBER OF ASSERTION
- TIME THE ASSERTION OCCURRED
- ID OF PROCESSOR THAT PRODUCED ASSERTION
- ID OF PROCESS THAT PRODUCED ASSERTION
- ID OF THREAD THAT PRODUCED ASSERTION
- TEXT OF ASSERTION
- STACK TRACE
- ID OF SOURCE LINE CONTAINING ASSERTION
- NAME OF SOURCE FILE CONTAINING CODE THAT GENERATED ASSERTION

RECORD AT LEAST ONE OF THE ABOVE PARAMETERS

FIG. 4

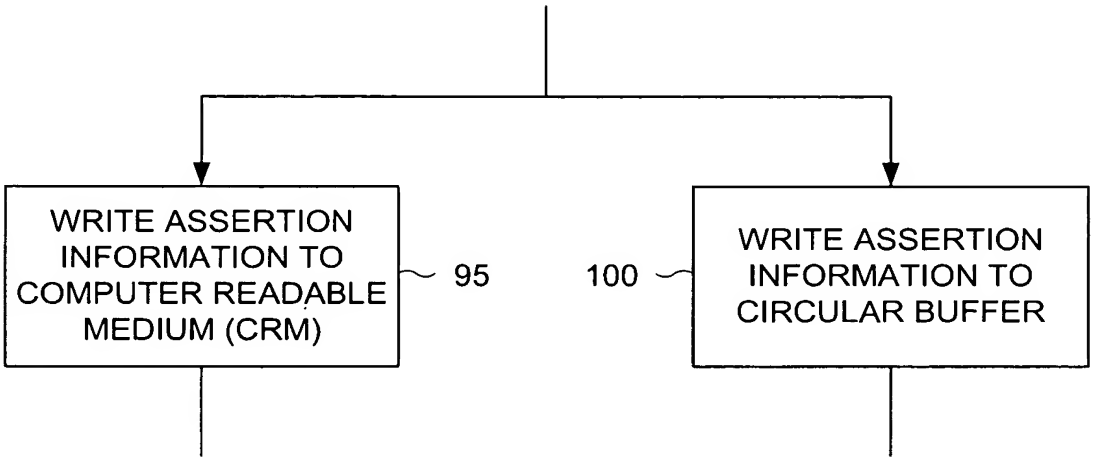

WRITE ASSERTION INFORMATION TO COMPUTER READABLE MEDIUM (CRM)
95
100
WRITE ASSERTION INFORMATION TO CIRCULAR BUFFER

FIG. 5

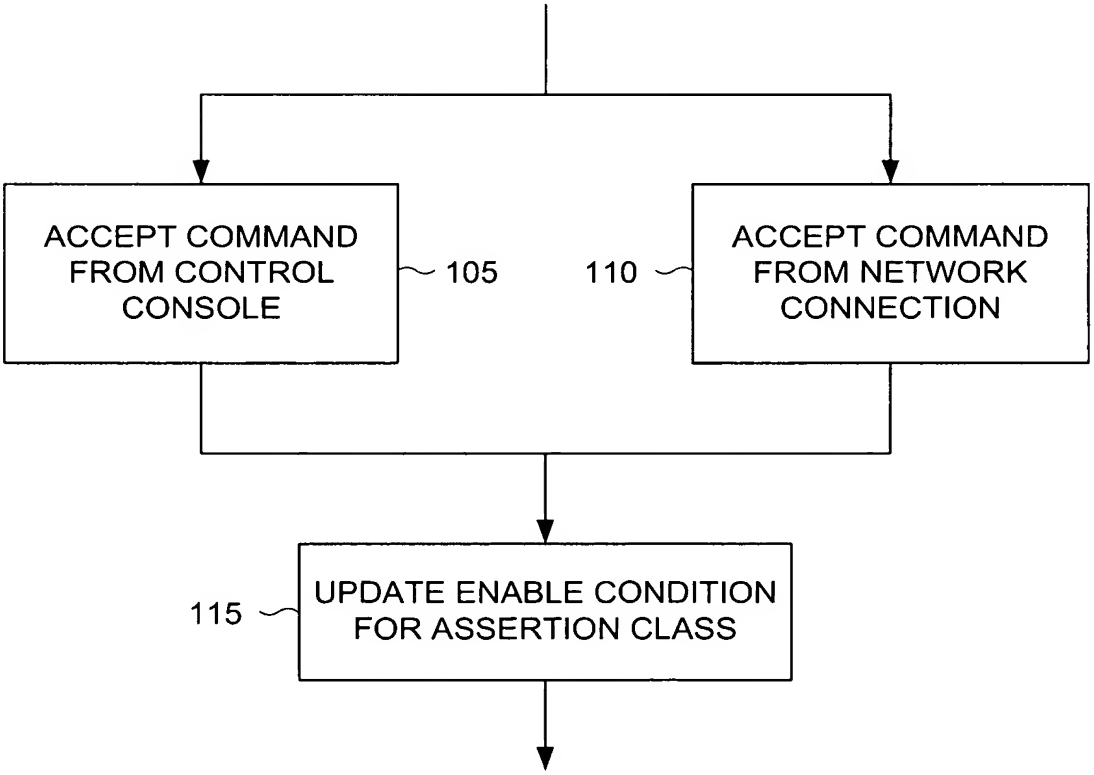
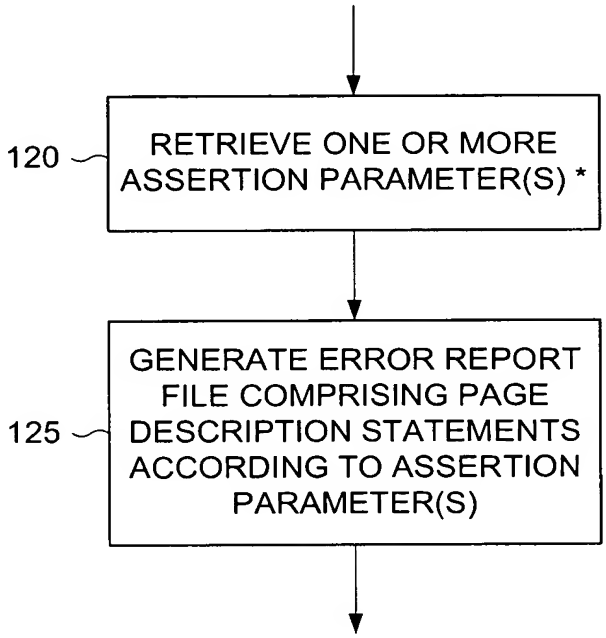

ACCEPT COMMAND FROM CONTROL CONSOLE
105
110
ACCEPT COMMAND FROM NETWORK CONNECTION
115
UPDATE ENABLE CONDITION FOR ASSERTION CLASS

FIG. 6

GENERATING AN ERROR REPORT



* PARAMETERS:
- ASSERTION TYPE
- SEQUENCE NUMBER OF ASSERTION
- TIME THE ASSERTION OCCURRED
- ID OF PROCESSOR THAT PRODUCED ASSERTION
- ID OF PROCESS THAT PRODUCED ASSERTION
- ID OF THREAD THAT PRODUCED ASSERTION
- TEXT OF ASSERTION
- STACK TRACE
- ID OF SOURCE LINE CONTAINING ASSERTION
- NAME OF SOURCE FILE CONTAINING CODE THAT GENERATED ASSERTION

RETRIEVE PARAMETER(S) INCLUDING AT LEAST ONE OF THE ABOVE

FIG. 7

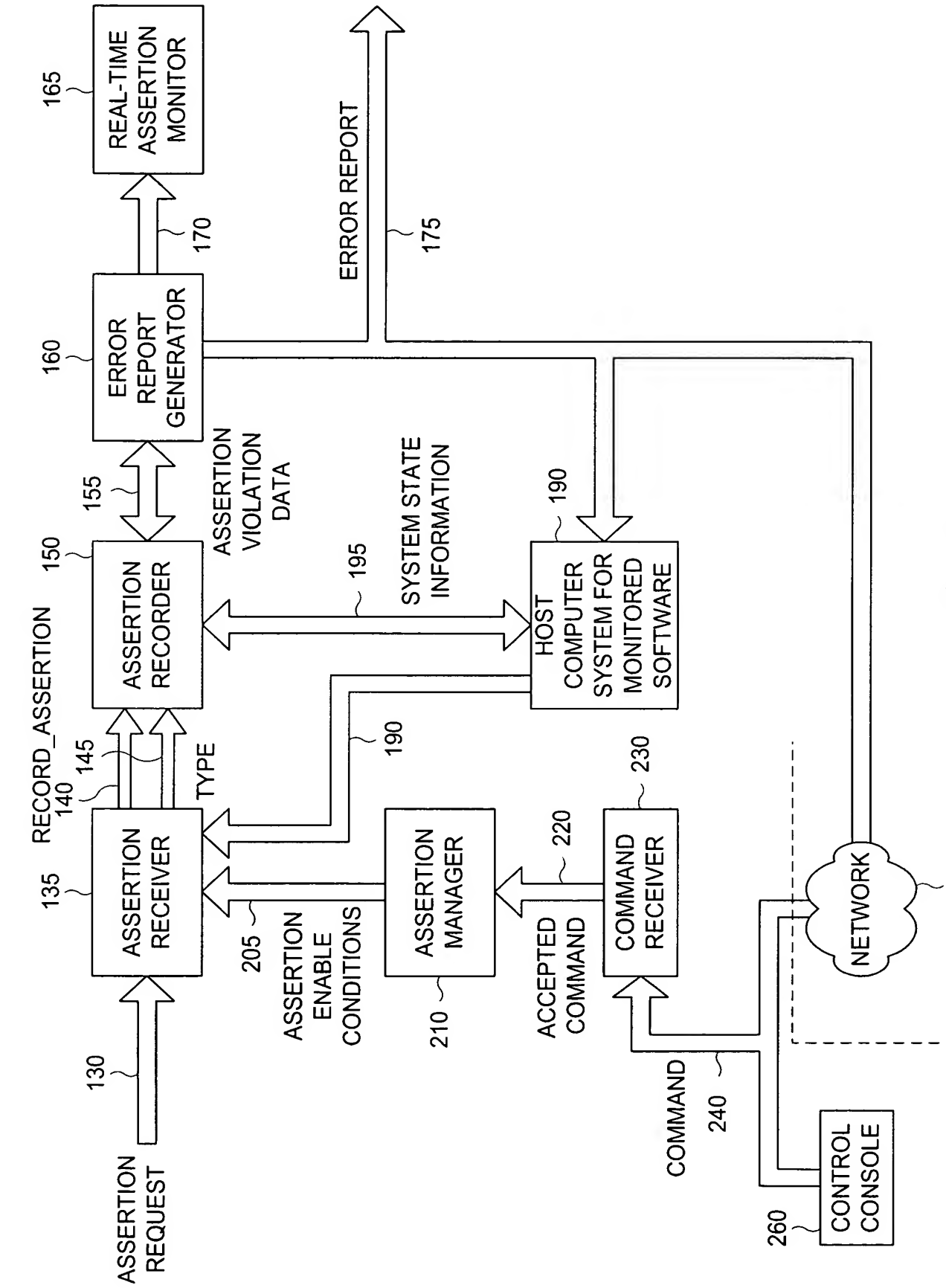

REAL-TIME ASSERTION MONITOR
165
ERROR REPORT
175
170
ERROR REPORT GENERATOR
160
155
ASSERTION VIOLATION DATA
SYSTEM STATE INFORMATION
195
190
150
ASSERTION RECORDER
HOST COMPUTER SYSTEM FOR MONITORED SOFTWARE
RECORD_ASSERTION
145
140
TYPE
190
230
135
ASSERTION RECEIVER
205
ASSERTION ENABLE CONDITIONS
ASSERTION MANAGER
210
220
ACCEPTED COMMAND
COMMAND RECEIVER
NETWORK
250
130
ASSERTION REQUEST
COMMAND
240
260
CONTROL CONSOLE

FIG. 8

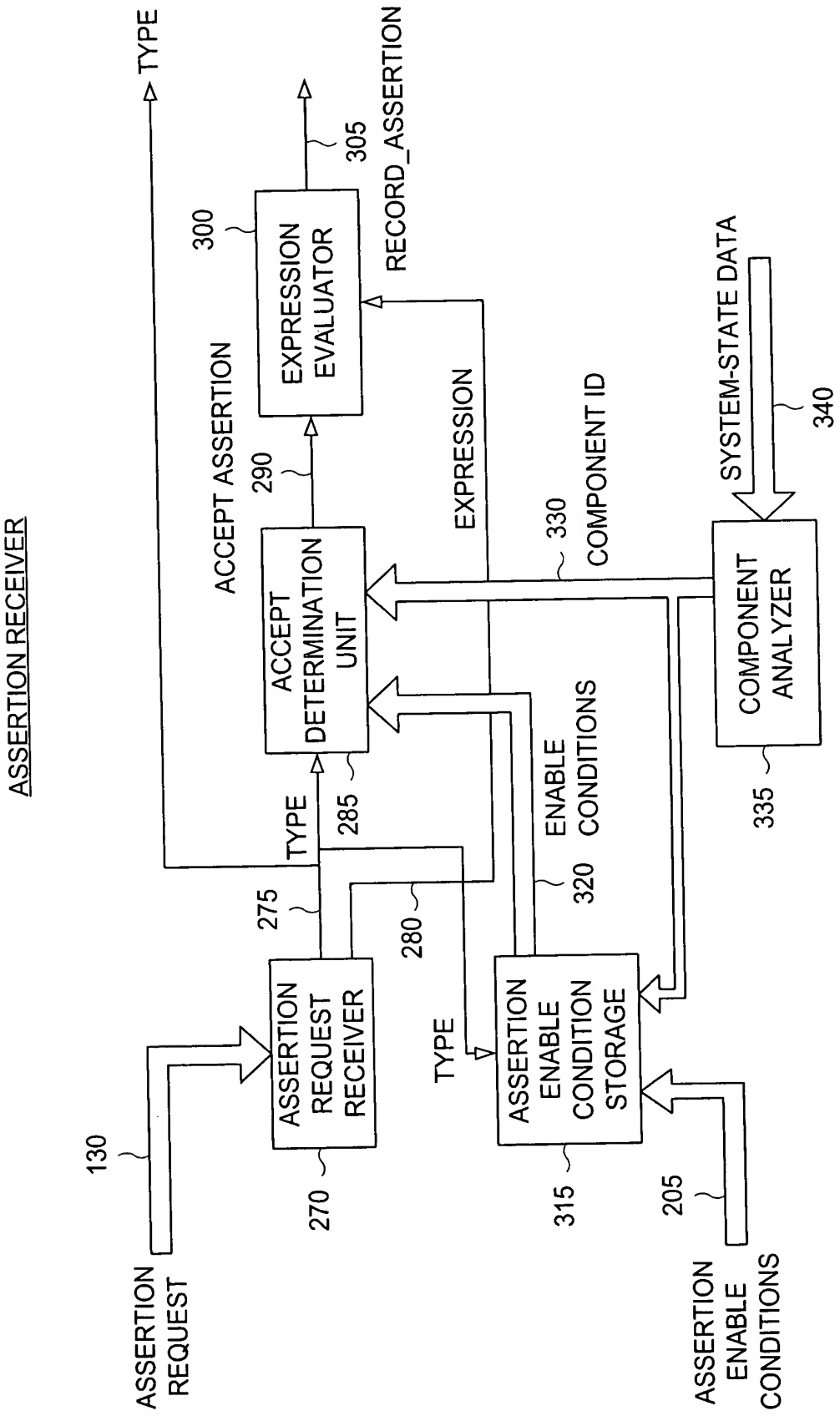

ASSERTION RECEIVER
TYPE
300
EXPRESSION EVALUATOR
305
RECORD_ASSERTION
ACCEPT ASSERTION
290
ACCEPT DETERMINATION UNIT
EXPRESSION
330
COMPONENT ID
SYSTEM-STATE DATA
340
COMPONENT ANALYZER
335
TYPE
285
275
ENABLE CONDITIONS
320
280
ASSERTION REQUEST RECEIVER
TYPE
ASSERTION ENABLE CONDITION STORAGE
130
270
315
205
ASSERTION REQUEST
ASSERTION ENABLE CONDITIONS

FIG. 9

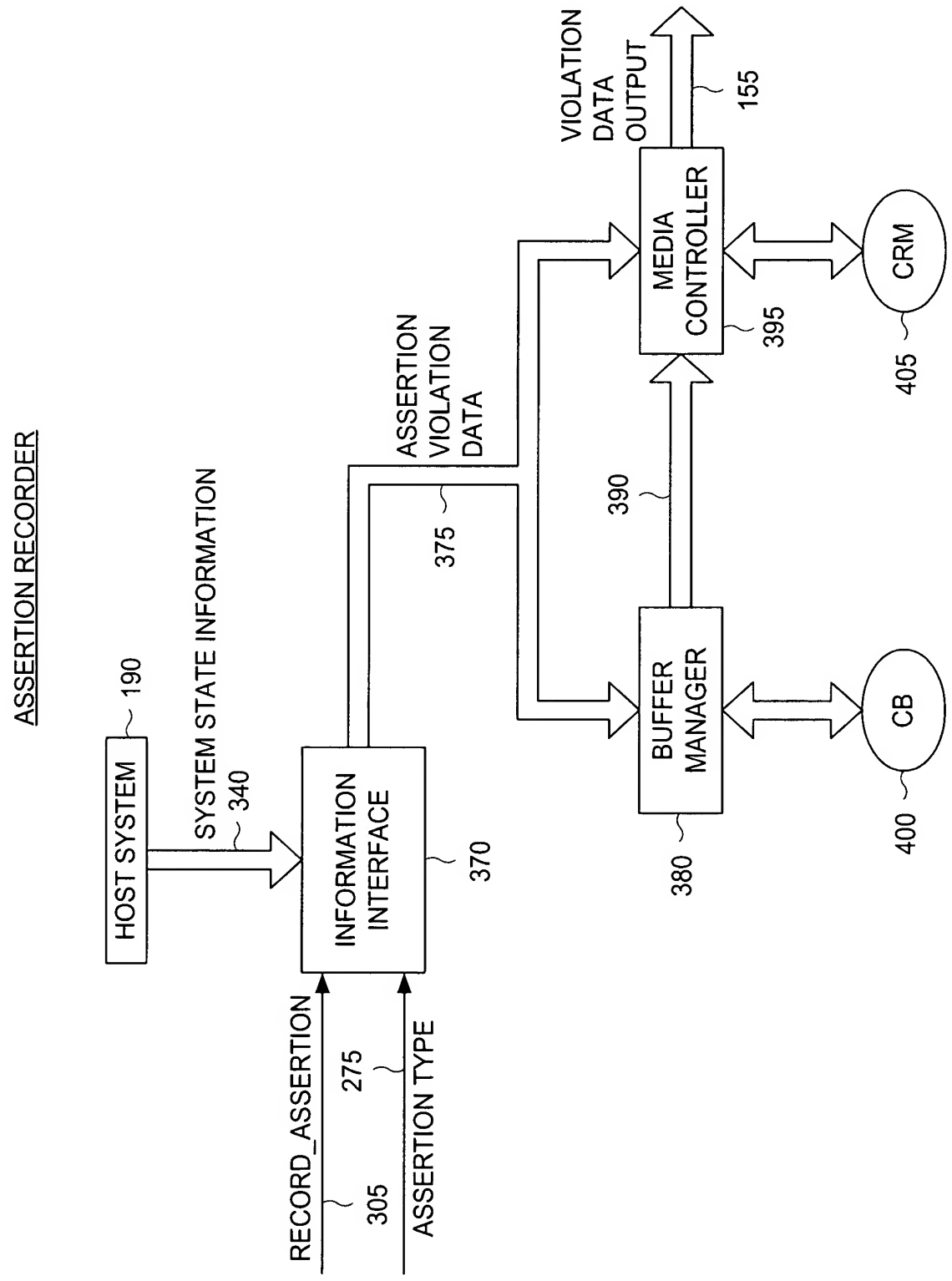

ASSERTION RECORDER
HOST SYSTEM
190
SYSTEM STATE INFORMATION
340
INFORMATION INTERFACE
370
RECORD_ASSERTION
305
275
ASSERTION TYPE
ASSERTION VIOLATION DATA
375
390
BUFFER MANAGER
380
CB
400
MEDIA CONTROLLER
395
CRM
405
VIOLATION DATA OUTPUT
155

FIG. 10

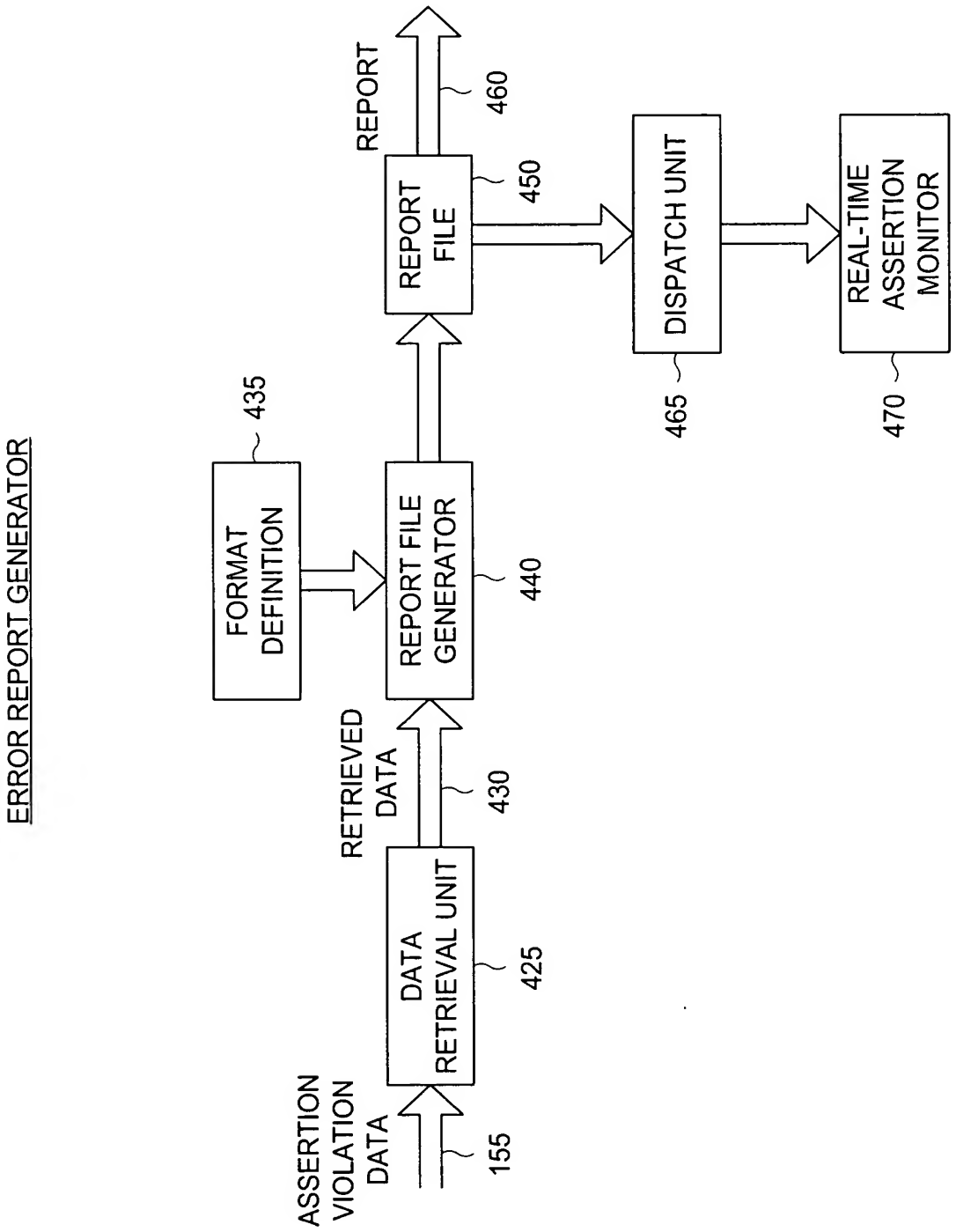

ERROR REPORT GENERATOR
ASSERTION VIOLATION DATA
155
DATA RETRIEVAL UNIT
425
RETRIEVED DATA
430
FORMAT DEFINITION
435
REPORT FILE GENERATOR
440
REPORT FILE
450
REPORT
460
DISPATCH UNIT
465
REAL-TIME ASSERTION MONITOR
470

FIG. 11

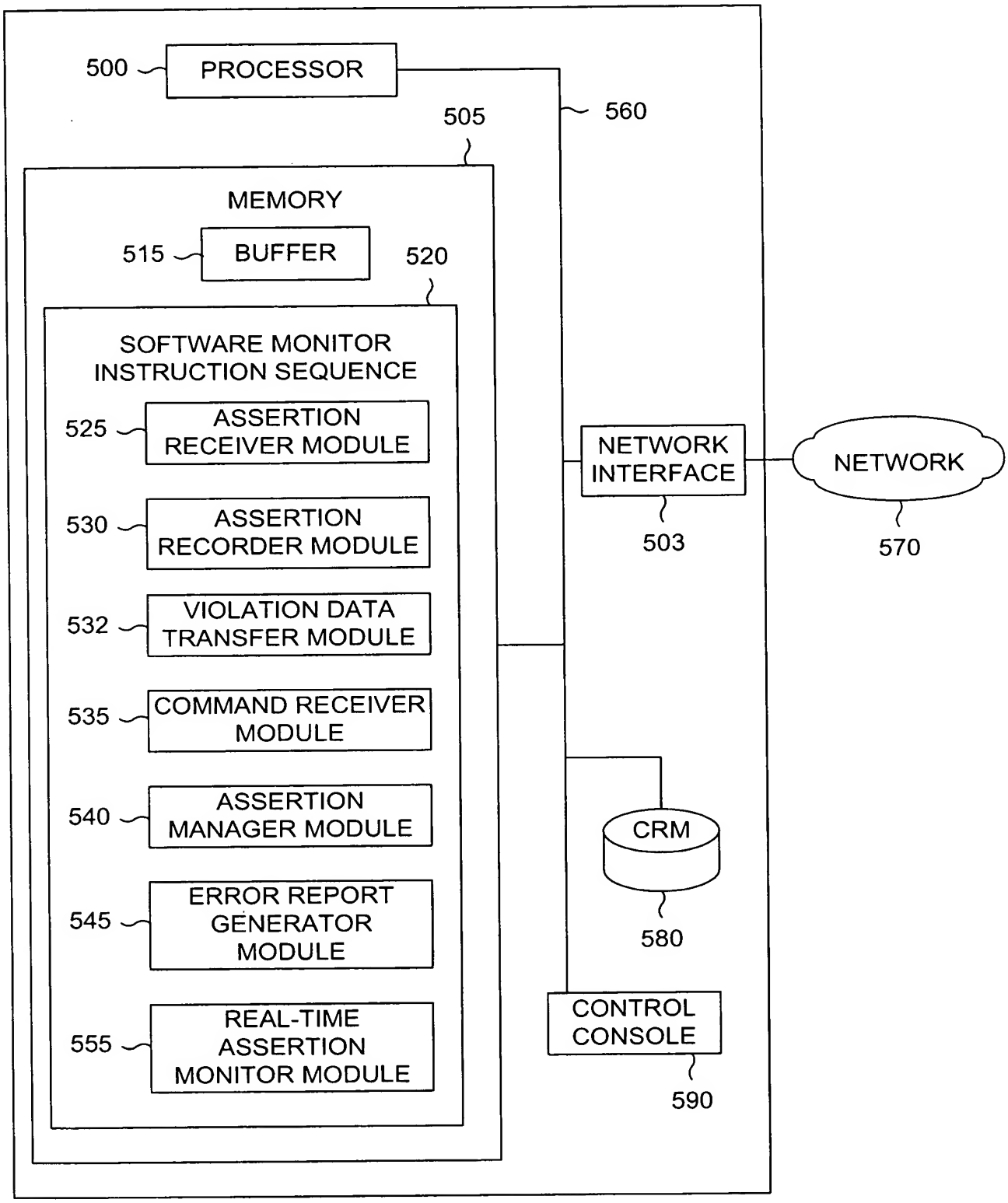

500
PROCESSOR
560
505
MEMORY
515
BUFFER
520
SOFTWARE MONITOR INSTRUCTION SEQUENCE
525
ASSERTION RECEIVER MODULE
530
ASSERTION RECORDER MODULE
532
VIOLATION DATA TRANSFER MODULE
535
COMMAND RECEIVER MODULE
540
ASSERTION MANAGER MODULE
545
ERROR REPORT GENERATOR MODULE
555
REAL-TIME ASSERTION MONITOR MODULE
NETWORK INTERFACE
503
NETWORK
570
CRM
580
CONTROL CONSOLE
590

FIG. 12

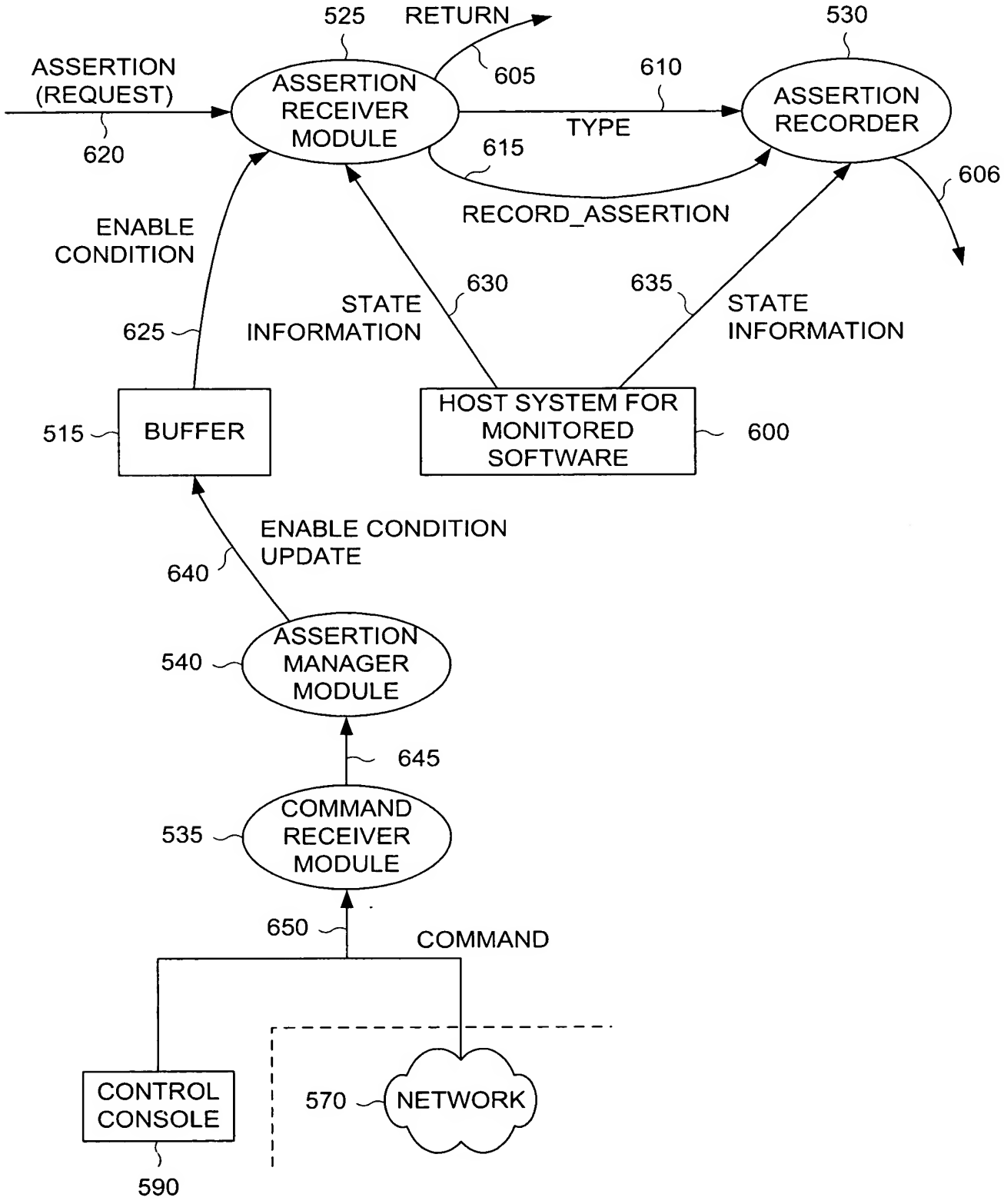

525
RETURN
530
ASSERTION
(REQUEST)
ASSERTION
RECEIVER
MODULE
605
610
ASSERTION
RECORDER
TYPE
620
615
606
RECORD_ASSERTION
ENABLE
CONDITION
630
635
STATE
INFORMATION
STATE
INFORMATION
625
515
BUFFER
HOST SYSTEM FOR
MONITORED
SOFTWARE
600
ENABLE CONDITION
UPDATE
640
ASSERTION
MANAGER
MODULE
540
645
COMMAND
RECEIVER
MODULE
535
650
COMMAND
CONTROL
CONSOLE
570
NETWORK
590

FIG. 13

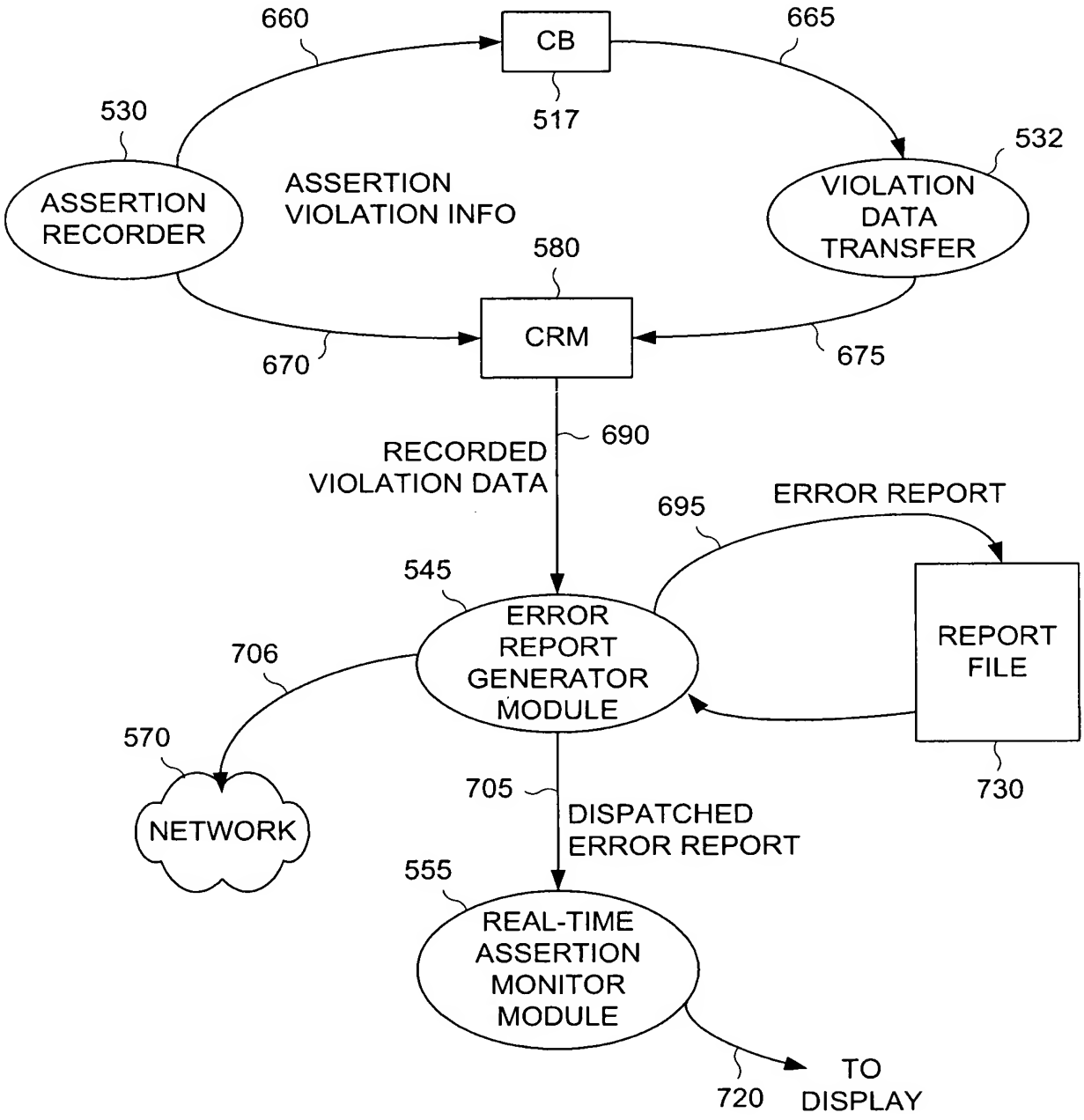

660
CB
665
517
530
532
ASSERTION RECORDER
ASSERTION VIOLATION INFO
VIOLATION DATA TRANSFER
580
CRM
670
675
690
RECORDED VIOLATION DATA
695
ERROR REPORT
545
ERROR REPORT GENERATOR MODULE
REPORT FILE
706
570
730
705
DISPATCHED ERROR REPORT
NETWORK
555
REAL-TIME ASSERTION MONITOR MODULE
720
TO DISPLAY

FIG. 14